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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/566,264

04/17/2007

Aharon J. Agranat

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10/12/2010

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EXAMINER

CHANG, AUDREY Y

ART UNIT

PAPER NUMBER

2872

MAIL DATE

DELIVERY MODE

10/12/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/566,264	<b>Applicant(s)</b> AGRANAT ET AL.	
	<b>Examiner</b> Audrey Y. Chang	<b>Art Unit</b> 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 and 30-41 is/are pending in the application.
- 4a) Of the above claim(s) 1-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 24-28 and 30-41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/26/2010</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Remark*

- This Office Action is in response to applicant's amendment filed on July 26, 2010, which has been entered into file.
- By this amendment, the applicant has amended claims 1, 22, 24, 30, 32, 34, 35, 37 and 41 and has canceled claim 29.
- Claims 1-23 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention group, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on December 23, 2009.
- Claims 24-28 and 30-41 remain pending in this application.

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. **Claims 24-28, and 30-41 are rejected under 35 U.S.C. 112, first paragraph**, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

**Claims 24 and 41 have been amended** to include the phrase "periodic modulation of ion concentration" that is not supported by the originally filed specification.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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4. **Claims 24-28 and 30-41 are rejected under 35 U.S.C. 112, second paragraph**, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Claim 24 has been amended** to include the phrase “permanently storing spatial periodicity in phase-transition temperature into an electro-optic crystal” that is confusing since it is not clear what does it mean by "spatial periodicity in phase-transition temperature". It is not clear the spatial periodicity is referred to the phase-transition temperature” or what? It is not clear how could the “temperature” be stored in the crystal. If the spatial periodicity is about the temperature then it is referred to what?

Furthermore, what is this “phase-transition temperature”? The transition is the transition between what phase?

Claim 24 has been amended to include the phrase "the selection is such that at said spatial modulator effects spatial periodicity in a phase-transition temperature within said crystal" that is completely confusing and indefinite. Please clarify since it is completely not known that what is this phrase intended to state?

Claims 24 and 41 have been amended to include the phrase “seeding a crystal seed in a solution” that is confusing since it is not clear what is the seed and is this solution.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. **Claims 24-28 and 30-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Magel et al (PN. 5,171,400).**

**Magel et al** teaches, with regard to claims 24 and 41, a method for producing periodic structure in an electro-optic crystal that is comprised the steps of growing the single electro-optic crystal by *periodically* changing or modulating the *growth rate* including the *periodically* modulating the temperature and pulling rate, (please see Figures, 1 and 2, column 4, lines 19-35, column line 41 to column 6, line 40).

**Claim 24 has been amended** to include the phrase “storing spatial periodicity in phase-transition temperature into an electro-optic crystal” that is confusing for the reasons stated above and this phrase cannot be examined with details. **Magel et al** teaches the spatial periodic structure is formed at the curie temperature or the phase transition temperature. The periodic structure formed by growing the lithium niobate crystal that has different or reversed ferroelectric properties.

**Claims 24 and 41 have been amended** to include the phrase “selecting periodic spatial modulation of ion concentration to be formed in the crystal”, **Magel et al** teaches that the method for producing periodic structure in an electro-optic crystal by periodically changing or modulating the growth rate so that the periodic modulation of the growth rate may certainly result periodic ion concentration variation in the resultant crystal. The spatial periodicity formed is by “selecting” the specific spatial periodicity. The amended features concerning “said selection is such that at said spatial modulation effects spatial periodicity in a phase-transition temperature within said crystal” of amended claim 24 is confusing and really cannot be further examined.

**Claim 24 has been amended** to include the phrase “seeding a crystal seed in a solution”. **Magel et al** teaches the growth of the electro-optic crystal involving dipping or seeding the ferroelectric crystal seed in a molten (i.e. a heated solution, please see column 2, lines 7-9).

**Claims 24 and 41 have been amended** to include a phrase of “causing temporal periodic modulation in a temperature of said seed in said solution so as to grow said electro-optic crystal”. Magel et al teaches that the heating of the molten or the solution is in temporal modulation so that the temperature of the seed in the solution, (please see Figure 2, column 2, lines 3-10).

With regard to claims 25-28 and 38-40, Magel et al teaches that the modulation of the growth temperature is achieved by laser heating process, (please see Figure 2A). The heating is periodically applied and similarly the non-heating or cooling is also periodically applied so that the growth temperature is also periodically modulated. The pulling rate is also periodically modulated with respect to the growth temperature modulation as shown in Figure 2C. Although this reference does not teach explicitly about the specific temperature changing rates as claimed, the modifications to utilize the specific rates would have been obvious to one skilled in the art, since it has been held when the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

With regard to claims 30-37, Magel et al teaches to store periodic structure in an electro-optic crystal by periodically modulating growth rate by modulating the growth temperature and/or pulling rate. The periodical modulation of the growth temperature is achieved by periodically heating however it does not teach the temperature modulation can also be achieved by stirring the growth solution, rotating the growth crucible or rotating the crystal itself. However one skilled in the art must know that by changing the crystal growth environment, such as stirring and rotation would cause additional energy to be delivered into or extracted out from the growth environment which therefore would change the growth temperature. Such modifications would then have been obvious to one skilled in the art as alternative ways to achieve the same temperature modulation.

***Response to Arguments***

7. Applicant's arguments with respect to amended claims 24-28 and 30-41 have been considered but are moot in view of the new ground(s) of rejection. The newly amended features of the claims have been fully considered and rejected for the reasons stated above. The arguments concerning the amended features have been fully addressed in the reasons for rejection above.

8. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., electrically tuned or modulated Bragg grating, phase transition in the crystal, ) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (9:00-4:30), alternative Fridays off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

***Audrey Y. Chang, Ph.D.***  
***/Audrey Y. Chang/***  
***Primary Examiner, Art Unit 2872***